Office - Supreme Court, U.S.
FILED
JAN 26 1953
HAROLD B. WILLEY, Clerk

IN THE

Supreme Court of the United States

OCTOBER TERM, 1952

No. 565

JOHN A. TURINI,

Petitioner,

vs.

ALLENS MANUFACTURING COMPANY, INC.,

Respondent.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FIRST CIRCUIT AND BRIEF IN SUPPORT THEREOF

FLOYD H. CREWS,
405 Lexington Avenue,
New York 17, N. Y.,
Counsel for Petitioner.

DARBY & DARBY,
HARVEY W. MORTIMER,
405 Lexington Avenue,
New York 17, N. Y.

JOSEPH MAINELLI,
Industrial Trust Bldg.,
Providence, Rhode Island.
Of Counsel.

INDEX

	PAGE
Opinions Below	2
Jurisdiction	2
The Parties and the Record	2
Summary and Short Statement of the Subject Matter Involved	2
The Questions Presented	3
Reasons for Granting Certiorari	3
Reason No. 1—The lower Courts generally, and the Court below in this case specifically, have completely misunderstood this Court's opinion in A & P v. Supermarket, 340 U. S. 147 (1950), and the patent system will soon be completely emasculated, the patent laws nullified, and the will of Congress thwarted, unless this is promptly corrected by this Court	4
Reason No. 2—The decision conflicts with the 1952 Patent Act, which applies to this case, and which has removed the evanescent and unworkable test of "importance" as a condition for validity of a patent	7
Reason No. 3—The decision conflicts with the 1952 Patent Act as a whole, which in its terms, scope, and spirit strengthens the patent system and makes it clear that Congress disapproves indiscriminate invalidation of patents	9
Conclusion	12

INDEX TO APPENDIX

PAGE

A Stipulation 1a

B Russell patent 1,882,369 (1932) 3a

C Hellman patent 1,795,559 (1931) 7a

D Wilson patent 356,055 (1887) 10a

E Howe patent 366,585 (1887) 16a

F The Poor Man's Tale of a Patent (Charles Dickens —1850) 29a

TABLE OF CASES

Aeration Processes v. Lange, 196 F. (2d) 981 6

Application of France, 190 F. (2d) 86 5

Application of Lee, 193 F. (2d) 186 5

Associated Folding Box Co. v. Leokoff, 194 F. (2d) 252 6

A & P v. Supermarket, 340 U. S. 147 .....3, 4, 5, 6, 12

Cuno v. Automatic Devices, 314 U. S. 84 9

Haliburton Oil Well Cementing Co. v. Walker, 329 U. S. 1 11

Ingersoll-Rand Co. v. Black & Decker, 192 F. (2d) 270. 6

Jungersen v. Ostby & Barton Company, 335 U. S. 560.. 12

McCord Corp. v. Beacon Auto Radiator Co., Inc., 193 F. (2d) 985 6

Mercoid Corp. v. Mid-Continent Investment Co., 320 U. S. 661 10

Montgomery Ward & Co. v. Buer, 186 F. (2d) 614.... 6

PAGE

Paramount Industries v. Solar Products Corp., 186 F. (2d) 999 6

Pennsylvania R.R. Co. v. Locomotive Engine Safety Truck Co., 110 U. S. 490 9

Red Devil Tools v. Hyde Mfg. Co., 193 F. (2d) 491... 5

United Specialties Co. v. Industrial Wire Cloth Products Corp., 186 F. (2d) 426 6

F. W. Wakefield Brass Co. v. Mitchell Mfg. Co., Inc., 191 F. (2d) 577 6

STATUTES CITED

1952 Patent Act (35 U. S. C.) 7, 9
Patent Statutes, Act 1790 7
Patent Act 1793 7
Patent Act 1836 8
Patent Act 1870 8
Revised Statutes of 1874 8
Section 1, Patent Act 1790 (1 Statutes at Large 109).. 7
1 Statutes at Large, 318 Section 1 7
Section 7, Patent Act 1836 (5 Statutes at Large 117).. 8
Section 31, Patent Act 1870 8
Revised Statute 4893 8
35 U. S. C. 36 10
35 U. S. C. 131 10
35 U. S. C. 271 10
35 U. S. C. 284 10
35 U. S. C. 285 10
35 U. S. C. 287 10
35 U. S. C. 288 11
35 U. S. C. 292 11

IN THE

Supreme Court of the United States

OCTOBER TERM, 1952

No. .....

JOHN A. TURINI,

Petitioner,

vs.

ALLENS MANUFACTURING COMPANY, INC.,

Respondent.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FIRST CIRCUIT AND BRIEF IN SUPPORT THEREOF

To the Honorable Chief Justice and Associate Justices of the United States Supreme Court:

Your petitioner, John A. Turini, prays for a writ of certiorari to the United States Court of Appeals for the First Circuit to review the judgment of that Court entered August 19, 1952 (rehearing denied November 9, 1952) affirming the decision of the United States District Court for the District of Rhode Island (Judge HARTIGAN, Circuit Judge, sitting by designation). An extension to January 27, 1953 for filing this petition has been granted.

A certified transcript of the record in this case, including the proceedings in the Court of Appeals, is furnished herewith in accordance with the rules of the Court.

Opinions Below

The opinion of the District Court (R. 272) is reported at 100 F. Supp. 61. The opinion of the Court of Appeals (R. 291) is reported at 198 F. 2d 491. There were no separate findings of fact or conclusions of law.

Jurisdiction

This Court is believed to have jurisdiction to review the judgment below under the provisions of 28 U. S. C. 1254 (1) and 2101 (c).

The Parties and the Record

The parties are herein called Turini and Allens. The District Court referred to four prior art patents in its opinion. The Court of Appeals referred in its opinion to only two of the four. All four of these patents are printed in the appendix hereto.

Summary and Short Statement of the Subject Matter Involved

Turini sued Allens for infringement of three patents as follows, all of which relate to the art of making buckles:

> Turini 2,481,179, filed September 16, 1946, issued September 6, 1949, for Method of Making Buckles, claims 1 and 2 (R. 5-6);
>
> Turini 2,481,180, filed December 19, 1946, issued September 6, 1949, for Buckle Assembly Machine, the single claim (R. 7-10);
>
> Turini, 2,488,352, filed November 8, 1946, issued November 15, 1949, for Buckle Assembling Device, claims 1, 2 and 3 (R. 11-14).

The District Court held all three patents invalid (R. 272-278). The Court of Appeals affirmed (R. 291 to 300). Both Courts held the patents invalid on the ground that they had not made a sufficiently outstanding contribution to the sum of human knowledge, following the *A. & P.* v. *Supermarket* case, 340 U. S. 147 (1950), despite findings that the inventions were new and useful, clever and ingenious in an art where skills are notoriously high, and implicitly recognizing the undisputed proof that they had revolutionized the industry.

The Questions Presented

1. Where patented inventions revolutionize an industry, and are held by the District Court to be new and useful, and by the Court of Appeals to be new and useful, to be clever and ingenious in an art where skills are notoriously high, and to have reduced labor cost and speeded production, should the patents be held invalid as a matter of law on the ground that they did not make a "sufficiently outstanding contribution to the sum of useful knowledge to warrant the protection of a patent"?

(a) Is Turini patent 2,481,179 valid?

(b) Is Turini patent 2,481,180 valid?

(c) Is Turini patent 2,488,352 valid?

Reasons for Granting Certiorari

1. The lower Courts generally, and the Court below in this case specifically, have completely misunderstood this Court's opinion in *A. & P.* v. *Supermarket,* 340 U. S. 147 (1950), and the patent system will soon be completely

emasculated, the patent laws nullified, and the will of Congress thwarted, unless this is promptly corrected by this Court.

2. The decision conflicts with the 1952 Patent Act, which applies to this case, and which has removed the evanescent and unworkable test of "importance" as a condition for validity of a patent.

3. The decision conflicts with the 1952 Patent Act as a whole, which in its terms, scope, and spirit strengthens the patent system and makes it clear that Congress disapproves indiscriminate invalidation of patents.

Reason No. 1—The lower Courts generally, and the Court below in this case specifically, have completely misunderstood this Court's opinion in *A & P* v. *Supermarket,* 340 U. S. 147 (1950), and the patent system will soon be completely emasculated, the patent laws nullified, and the will of Congress thwarted, unless this is promptly corrected by this Court.

With respect to all three of the patents in suit the Court below said that the method and mechanical means disclosed resulted (R. 293):

> "in a series of automatic operations thereby reducing labor cost and at the same time speeding production."

With respect to the third patent the Court below stated:

> "Turini showed a fairly high degree of ingenuity in the way he formed these old elements and also in the way he arranged them to cooperate with one another to produce the result he sought and attained." (R. 300)

> "The functions performed by Turini are new and useful." (R. 300)
>
> "Skills are notoriously high in the tool making art." (R. 300)
>
> "Clever and ingenious the device may be, and it no doubt speeded production." (R. 300)
>
> The prior art does "not disclose any machine which can fairly be said to anticipate" (R. 299).

The Court nevertheless held the third patent invalid for the reason that (R. 300):

> "we do not think it can be regarded, either in its conception or construction, as a sufficiently outstanding contribution to the sum of useful knowledge to warrant the protection of a patent."

The language was taken directly from this Court's opinion in the *A & P case.*

The *A & P* case has been cited at least 41 times by lower Courts and numerous patents have been held invalid supposedly following its doctrines. The lower Courts have made it clear that they regard the *A & P* case as establishing a sharp departure from the law as previously understood.* In the present case the Court below applied

---

The forceful impact of the *A & P* case is reflected directly in the opinions of the lower Courts:

Court of Customs and Patent Appeals:

"The function of a patent is to add to the total stock of useful knowledge", citing the *A & P* case. *Application of Lee,* 193 Fed. 2(d), 186, 190, 1951.

"The Supreme Court recently set an appropriate new standard for determining whether invention resides . . .". *Application of Franz,* 190 Fed. 2(d) 86, 89, 1951 (specially concurring opinion).

First Circuit:

"We do not believe that the Echikson patent meets the test laid down by the Supreme Court in the *A & P* case "where the Court said: * * * 'The function of a patent is to add to the sum of useful knowledge * * *'" *Red Devil Tools* v. *Hyde Mfg. Co.,* 193 Fed. 2(d) 491, 1951.

"While no doubt he filled a known want and enjoyed success, his achieve-

and completely misconstrued it, though without citing it. The doctrines it is erroneously thought to have established are already so ingrained as to appear axiomatic, requiring no authority.

In the *A & P* case the Court said at 340 U. S. 153:

> "This patentee has added nothing to the total stock of knowledge, * * *."

Striking down such a patent obviously could not establish a new standard.

---

ment in his field would seem to be less spectacular than Turnham's achievement in the 'cash and carry' grocery store field which the Court in the *A & P* case said was insufficient to tip the scales in favor of invention * * * the rigorous standard required by the law as it stands today * * *". *McCord Corp.* v. *Beacon Auto Radiator Co. Inc.*, 193 Fed. 2(d) 985, 990, 1952.

"The Court below, therefore, erred in using a less exacting standard of invention" than that required by the *A & P* case. *Associated Folding Box Co.* v. *Levkoff*, 194 Fed. 2(d), 252, 257, 1952.

Second Circuit:

". . . these facts show only the more what Supreme Court Justices are now openly suggesting, namely, that the standard in the Patent Office has become lower than is justified under present legal authority. *Paramount Industries* v. *Solar Products Corp.*, 186 Fed. 2(d), 999, 1000, 1951.

Fourth Circuit:

"On this point [patentable combination], the Supreme Court has convincingly spoken through Mr. Justice Jackson in the recent (and very well known *A & P* case." *Ingersoll-Rand Co.* v. *Black and Decker*, 192 Fed. 2(d), 270, 273, 1951.

Sixth Circuit:

". . . the tests which the Supreme Court, in its more recent decisions, have imposed upon us in the consideration of combination patents. The latest word is the *A & P* case "and is a mandate for us . . . the function of a patent is to add to the sum of useful knowledge." *United Specialties Co.* v. *Industrial Wire Cloth Products Corp.*, 186 Fed. 2(d), 426, 428, 1951.

Sixth Circuit:

"If after the hearing on November 29th last, any doubt remained as to the correct result it is entirely cleared away by the . . ." *A & P* case. *Montgomery Ward & Co.* v. *Buer*, 186 Fed. 2(d), 614, 616.

Seventh Circuit:

"It is well within the line of patents condemned by the Supreme Court which" in the *A & P* case said: '. . . This patentee has added nothing to the total stock of knowledge, . . .'" *F. W. Wakefield Brass Co.* v. *Mitchell Mfg. Co. Inc.*, 191 Fed. 2(d), 577, 579, 1951.

Eighth Circuit:

"He satisfied the requirements of patentable invention even of the concurring minority" in the *A & P* case "in that he pushed back the frontiers of chemistry and physics and made a distinct contribution to scientific knowledge," *Aeration Processes* v. *Lange*, 196 Fed. 2(d), 981, 985, 1952.

The Court below, in following the trend of the lower Courts' erroneous interpretation of the *A & P* case, has stricken down a patent which it expressly held to be new, to be useful, to be clever and ingenious and in art where skills are notoriously high, to have reduced labor costs, and to have speeded production. Obviously under these fact findings the patentee made an enormous contribution to the total stock of knowledge.

There is no way to stop the tide of misinterpretation of the *A & P* case other than by action by this Court.

Reason No. 2—The decision conflicts with the 1952 Patent Act, which applies to this case, and which has removed the evanescent and unworkable test of "importance" as a condition for validity of a patent.

The 1952 Patent Act (35 U. S. C.) is by its terms applicable to this case at its present stage. It provides in Section 4:

> "It (the Act) shall apply to unexpired patents granted prior to such date (January 1, 1953) except as otherwise provided."

There is no exception applicable here.

The requirement of importance as a condition to patentability was first incorporated in the patent statutes in the Act of 1790,* but was made discretionary with the Secretary of State, the Secretary of the Department of War, and the Attorney General, or any two of them. The language was that a patent would be granted:

> "if they shall deem the invention or discovery sufficiently useful and important,"

The Patent Act of 1793** repealed the requirement of importance.

---

* Section I, the Patent Act of 1790 (1 Statutes at Large, 109).
** 1 Statutes at Large, 318. Section I.

The Patent Act of 1836* reinstated the requirement of importance, making it discretionary with the Commissioner of Patents, the statute stating that a patent would be granted:

> "if the Commissioner shall deem it to be sufficiently useful and important,"

The Act of 1870** repeated this requirement without change in substance.

The revised statutes of 1874*** simply re-enacted the 1870 Act as to importance, which was again re-enacted in the U. S. Code in 1926 (35 U. S. C. 36; R. S. 4893).

In removing the requirement of importance in the 1952 Act, Congress was therefore guided by the experience of three years where importance was a requirement, 43 years where importance was not a requirement, followed by 116 years where importance was again a requirement. It is therefore clear that in liberalizing the statute Congress took cognizance of the evanescent and unworkable nature of this condition, and of the danger of indiscriminate invalidation of good patents based on a subjective and elusive test.

Under the 1952 Act the decision below must be reversed, which can be accomplished only by the granting of this petition.

---

* Section 7, Patent Act of 1836; 5 Statutes at Large, 117.
** Section 31, Patent Act of 1870.
*** R. S. 4893.

Reason No. 3—The decision conflicts with the 1952 Patent Act as a whole, which in its terms, scope, and spirit strengthens the patent system and makes it clear that Congress disapproves indiscriminate invalidation of patents.

The 1952 patent statute strengthens the patent system in a number of specific ways, and overrules or clarifies many decisions of this Court.

It expressly makes patentable a new use of a known process, machine, manufacture, composition of matter, or material (35 U. S. C. 100(b)). This has previously been forbidden, e.g. in *Pennsylvania R. R. Co.* v. *Locomotive Engine Safety Truck Co.*, 110 U. S. 490, 494 (1884), and cases following.

It expressly authorizes a patent despite the invention having been made in this country earlier by another, where the other had abandoned, suppressed or concealed the invention (35 U. S. C. 102(g)). This authorization had previously not been written into the statute.

It expressly provides that

> "Patentability shall not be negatived by the manner in which the invention was made" (35 U. S. C. 103)

thus administering the *coup de grace* to the flash of genius doctrine (*Cuno* v. *Automatic Devices*, 314 U. S. 84) and overruling the "patient and exhaustive research" line of cases.

It provides for patenting an invention unless the subject matter "as a whole" is old, the language of the statute providing that a patent may not be obtained where (35 U. S. C. 103):

> "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."

The phrase "and that the invention is sufficiently useful and important" which was present in 35 U. S. C. 36 (from 1836 to 1952) as a requirement for patentability has been expunged from the statute, the corresponding new section being 35 U. S. C. 131 (discussed above at pp. 7-8).

It expressly enacts a doctrine of contributory infringement in 35 U. S. C. 271(b) and (c) the language in Sec. 271(b) being:

> "Whoever actively induces infringement of a patent shall be liable as an infringer."

Doubt as to any "residuum" of this doctrine had been expressed in *Mercoid Corp.* v. *Mid-Continental Investment Co.*, 320 U. S. 661 (1944).

It expressly restricts the misuse doctrine, providing that three specific things mentioned, including suing for contributory infringement, shall not constitute misuse (35 U. S. C. 271(d)).

It continues in effect three-fold damages for patent infringement in the discretion of the Court (35 U. S. C. 284).

It continues in effect attorneys' fees to the prevailing party in exceptional cases (35 U. S. C. 285).

It provides that filing of an action for infringment shall constitute notice of the patent (35 U. S. C. 287).

The penalty for delay in disclaiming invalid claims, which was contained in 35 U. S. C. 71, has been removed from the new statute (35 U. S. C. 288).

It provides penalties for false marking of "patent pending" (35 U. S. C. 292). Previously only false marking of "patented" had been penalized by statute.

It expressly permits the use of "means" expressions in combination claims. This had been condemned in *Halliburton Oil Well Cementing Co.* v. *Walker*, 329 U. S. 1 (1946).

Taking the Act in its entirety, Congress could not have made it clearer that it disapproves the sniping at patents and whittling away of patent rights which has occurred. It is important to the progress of science and to a sound and progressive economy that this be recognized and implemented by this Court. There could be no better starting place than in this case.

To express it realistically, by repealing the judicial legislation which has emasculated the patent laws, Congress has made it clear that it wants those laws observed. The lower Courts should be guided to an understanding that they should be enforced. The time to do so is now.

The plight of the inventor in this country in recent years has been little if any better than that of John, the inventor, in Charles Dickens, who complained (p. 35a herein):

> "Thereby I say nothing of my being tired of my life, while I was Patenting my invention. But I put this: Is it reasonable to make a man feel as if, in inventing an ingenious improvement meant to do good, he had done something wrong? How else can a man feel, when he is met by such difficulties at every turn? All inventors taking out a Patent

> MUST feel so." (See Appendix F hereto, page 29a : "The Poor Man's Tale of a Patent," by Dickens).

Even before the *Supermarket* case Mr. Justice JACKSON in his dissenting opinion in *Jungersen* v. *Ostby and Barton* Company, 335 U. S. 560, at page 572 (1949) referred to

> "an equally strong passion in this Court for striking them down so that the only patent that is valid is one which this Court has not been able to get its hands on."

Congress has now legislated a brighter day. This Court should turn on the lights at the earliest possible moment.

Conclusion

It is accordingly prayed that the petition for writ of certiorari be granted and the judgment below reviewed and reversed.

Respectfully submitted,

FLOYD H. CREWS,
405 Lexington Avenue,
New York 17, N. Y.,
Counsel for Petitioner.

DARBY & DARBY
HARVEY W. MORTIMER
405 Lexington Avenue
New York 17, N. Y.

JOSEPH MAINELLI
Industrial Trust Bldg.
Providence, Rhode Island
Of Counsel

New York, N. Y.,
January 26, 1953.

Appendix A

UNITED STATES OF AMERICA

SUPREME COURT OF THE UNITED STATES

October 1952 Term

STIPULATION

JOHN A. TURINI, Petitioner, *vs.* ALLENS MANUFACTURING COMPANY, INC., Respondent.	In Re Petition for Writ of Certiorari

On Petition for Writ of Certiorari to the United States Court of Appeals for the First Circuit in Appeal No. 4631, in that it is hereby stipulated between the parties, the three (3) unprinted books of cuts and the paper exhibits which have to be certified to the Supreme Court as part of the record in this case need not be printed but either party may print and include the same as an appendix to the brief for the petitioner or the respondent, as the case may be, or any portion of such unprinted matter as either party desires.

/s/ FLOYD H. CREWS
Floyd H. Crews
Counsel for Petitioner
A member of the Bar of the Supreme Court of the United States
405 Lexington Avenue
New York 17, N. Y.

Appendix A

RALPH ROTONDO
Ralph Rotondo
Counsel for Respondent
634 Hospital Trust Building
Providence, R. I.

January 16, 1953

DARBY & DARBY
HARVEY W. MORTIMER
405 Lexington Avenue
New York 17, N. Y.

JOSEPH MAINELLI
Industrial Trust Building
Providence, Rhode Island
Of Counsel for Petitioner

Appendix B

Oct. 11, 1932. T. RUSSELL 1,882,369

TONGUE BUCKLE AND PROCESS FOR MAKING SAME

Filed June 10, 1930

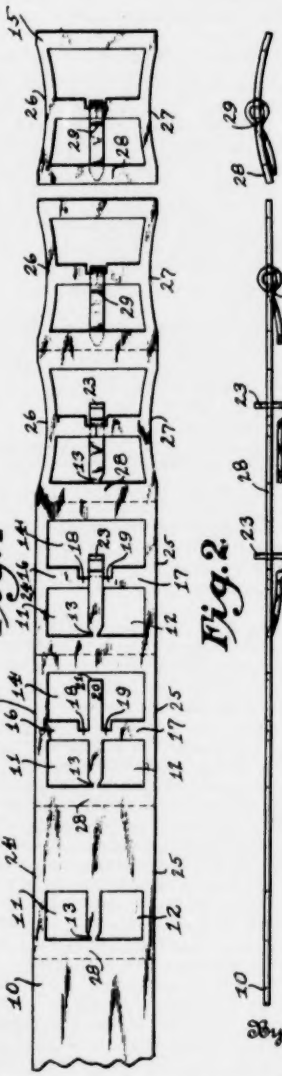


Fig. 1

Fig. 2

Inventor
Theodore Russell.

By Attorney
H. G. Manning

Appendix B

UNITED STATES PATENT OFFICE

THEODORE RUSSELL, OF NAUGATUCK, CONNECTICUT

TONGUE BUCKLE AND PROCESS FOR MAKING SAME

Application filed June 10, 1930. Serial No. 460,166.

This invention relates to buckles, and more particularly to an improvement in a process of manufacturing pivoted tongue buckles, whereby the tongue of the buckle is produced directly from the metal of the buckle frame.

One object of this invention is to provide a process of producing buckles which will be simple in operation, economical of labor and material, and in which the buckle produced will be ornamental in appearance, and efficient and durable in use.

With these and other objects in view there has been illustrated on the accompanying drawing one form in which the invention may be conveniently embodied in practice.

In the drawing:

Fig. 1 represents a plan view of a metal strip showing the appearance of the buckle after the various successive steps of the process have taken place.

Fig. 2 is a side view of the same.

Referring now to the drawing in which like reference numerals denote corresponding parts throughout the several views, the numeral 10 indicates the original flat metal strip from which the buckle is made, said strip being fed by suitable mechanism, not shown, through an automatic stamping and bending machine, not shown, from left to right as viewed in Figs. 1 and 2. The various successive steps of the process are adapted to be performed by a series of tools consisting of dies and plungers, not shown, between which said strip is moved intermittently.

The first step in the process consists of a piercing operation by means of which two metal pieces are stamped out leaving a pair of rectangular openings 11 and 12 in said strip. The longitudinal piece between said openings 11 and 12 is partially pointed at the end 13, but not entirely severed from the frame.

The second step, which occurs after the strip has been moved through the machine a distance equal to the length of the finished buckle frame 15, the ends of which are indicated by the dotted lines, consists in another piercing operation, leaving a rectangular aperture 14 in the right-hand end of the buckle frame. A pair of inwardly extending cross-bar sections 16 and 17 are left at the center of the frame, and said sections 16 and 17 have reduced central portions 18 and 19 which are joined together by a longitudinal tongue section 20 having a free end 21 which is adapted to be later bent about the cross-bar of the buckle frame. It will be understood that the tongue is thus formed from material which is scrapped in the ordinary process of manufacturing buckle frames, and thereby results in a great saving of cost thereover.

The third step consists in simultaneously bending the free end 21 of the tongue into a curved section 22 and a vertical heel 23, as most clearly shown in Fig. 2, and shearing the cross-bar sections 16 and 17 from the tongue section 20.

The fourth step in the process consists in pressing the free end of the tongue 20 downwardly out of the plane of the frame 15 and then closing in the initially straight sides 24 and 25 of the buckle frame to form inwardly curved side members 26 and 27, and causing the cross-bar sections 16 and 17 to be brought into abutment to form a continuous cross-bar.

The fifth step, which occurs immediately after the squeezing-in of the cross-bar sections, consists in shearing the point 13 of the tongue from the left-hand end 28 of the buckle frame, after which the heel 23 of the tongue will be bent rearwardly and downwardly around the reduced sections 18 and 19 of the cross-bar into engagement with the base of said tongue at the point 29. This last operation is preferably accomplished with the aid of a stationary bumper not shown, located on the edge of the machine in the path of the tongue.

The sixth and last step of the process consists in shearing the left-hand end 28 of the buckle frame 15 away from the strip 10. The buckle is then completely formed and the process has been completed.

It will be understood that if desired, instead of forming the tongue in the manner above described, the tongue may be blanked out completely from the strip in the first operation, and the stamped-out tongue later

Appendix B

connected to the frame by bending its loop-end around the squeezed-in cross-bar sections, within the spirit and scope of the invention.

It will also be understood that the process may be performed by hand as well as by machine as herein described.

While there has been disclosed in this specification one form in which the invention may be embodied, it is to be understood that this form is shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosure but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new, and for which it is desired to secure Letters Patent, is:

1. The process of making a buckle having a hinged tongue which comprises cutting end pieces out of a sheet metal frame to form openings at both ends of said frame and leaving an integral transverse cross-bar at the center thereof and a longitudinal tongue joined to said cross-bar, severing said tongue from said cross-bar, forcing said tongue section below the plane of said frame, pressing the sides of said frame inwardly to cause said cross-bar sections to come into abutment, and bending the end of said tongue around said cross-bar.

2. The process of making a buckle having a hinged tongue connected to a cross-bar, which comprises stamping two pieces out of one end of a metal frame, leaving a tongue section therebetween, the end of which is still connected to said frame, stamping a single piece out of the other end of said frame leaving a central tongue section having a free end, transverse cross-bar sections being formed at the center of said frame integral with said tongue sections, severing said cross-bar sections from said tongue sections, bending said tongue about the end of the frame until its free end section is below the plane of said frame, pressing the sides of said frame inwardly to bring said cross-bar sections into abutment, and bending the free end of the said tongue around said cross-bar.

3. The process of making a buckle having a hinged tongue connected to a cross-bar, which comprises stamping two pieces out of one end of a metal frame leaving a tongue section therebetween, the end of which is still connected to said frame, stamping a single piece out of the other end of said frame leaving a central tongue section having a free end, transverse cross-bar sections being formed at the center of said frame integral with said tongue sections, severing said cross-bar sections from said tongue sections, bending said tongue about the end of the frame until its free end section is below the plane of said frame, pressing the sides of said frame inwardly to bring said cross-bar sections into abutment, severing the end of said tongue from the frame, and bending the other end of said tongue around said cross-bar.

4. The process of making a buckle having a hinged tongue connected to a cross-bar, which comprises stamping two pieces out of one end of a metal frame leaving a tongue section therebetween, the end of which is still connected to said frame, stamping a single piece out of the other end of said frame leaving a central tongue section having a free end, transverse cross-bar sections being formed at the center of said frame having reduced inner extremities integral with said tongue sections, severing said cross-bar sections from said tongue sections, bending said tongue about the end of the frame until its free end section is below the plane of said frame, pressing the sides of said frame inwardly to bring said cross-bar sections into abutment, and bending the free end of said tongue around said cross-bar.

5. The process of making a hinged-tongue buckle from a single metal blank, which comprises stamping end pieces out of said blank leaving a pair of transverse cross-bar sections and a longitudinal tongue integral therewith, severing said tongue from said cross-bar sections, forcing the inner extremities of said cross-bar sections into abutment, and looping one end of said tongue around the abutted ends of said cross-bar sections.

6. The process of making a hinged-tongue buckle from a single metal blank, which comprises stamping a tongue from the longitudinal central section of said blank leaving a pair of spaced transverse cross-bar sections, forcing said cross-bar sections inwardly into abutment, and looping one end of said tongue around the abutted ends of said cross-bar sections.

7. The process of making a hinged tongue buckle, which comprises cutting out metal from the end sections of a sheet metal blank to produce an intermediate transversely extending member integral with said blank, and a longitudinal tongue member having one end integral with said blank, looping the other end of said tongue member around said intermediate member, and detaching said tongue member from said blank.

8. In a buckle, a sheet metal frame having openings at both ends with a pair of intermediate transverse cross bar members extending inwardly from the sides of said frame, a sheet metal tongue, the sides of said frame being bent inwardly to bring said cross bar members into abutment, one end of said tongue being looped around the abutting sections of said members.

9. In a buckle, a sheet metal frame hav-

ing interior openings near both ends leaving an intermediate transverse cross bar member, a tongue having one end bent around said cross bar, the sides of said frame being forced inwardly, the width of said tongue being approximately equal to the distance said sides have been forced in.

In testimony whereof, I have affixed my signature to this specification.

THEODORE RUSSELL.

Appendix C

March 10, 1931. H. HELLMANN 1,795,559

METHOD FOR THE PRODUCTION OF FLAP SLIDING BUCKLES

Filed July 8, 1929

Fig.1

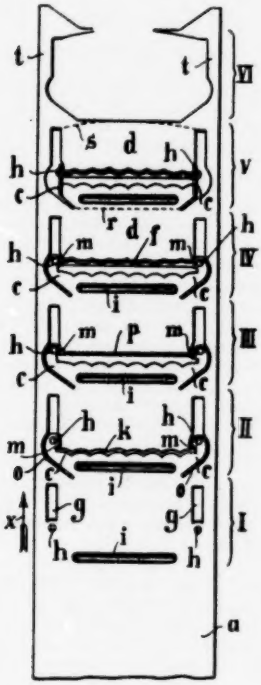


Fig. 2

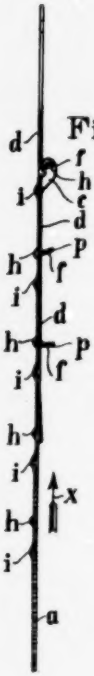


Fig.3

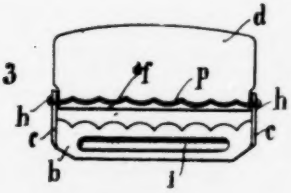
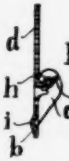


Fig.4



Inventor:
Heinrich Hellmann
by Paul O. Pollitzer
attorney

Patented Mar. 10, 1931 *Appendix C* 1,795,559

UNITED STATES PATENT OFFICE

HEINRICH HELLMANN, OF LUDENSCHEID, GERMANY

METHOD FOR THE PRODUCTION OF FLAP SLIDING BUCKLES

Application filed July 8, 1929, Serial No. 376,523, and in Germany April 3, 1928.

The invention relates to a method of producing flap sliding buckles for braces or such like. With the new method buckle-bed and flap are punched out of the same strip of sheet-metal and joined prior to being entirely detached from the strip of sheet-metal.

A particular feature of the new method consists therein, that the serrated edge of the buckle-flap and the upper edge of the bed are punched out by means of a common cut, i. e. immediately adjoining each other and that the lateral parts of the buckle-bed are turned over without shrinkage of the lateral waste-strip and made to engage with the pivots.

The new method is characterized by the fact, that on the one hand the waste of material is restricted within the narrowest possible limits and on the other hand, it embodies the advantage, that the method may be carried out by means of an ordinary press for multiple cut, in which the whole of the tools are attached to a common ascending and descending slide.

In the drawing Figs. 1 and 2 illustrate the various phases of operation of the method in a plan-view and in longitudinal section, whilst in Figs. 3 and 4 the completed article is shown in a plan-view and in longitudinal section.

a represents a strip of sheet-metal from which flap sliding buckles are made in one continuous working operation such as illustrated in Fig. 3. This buckle consists in a manner known in itself, of the buckle-bed *b* and the flap *d*, *f* positioned within the bent-up lateral parts *c*. This flap is as usual, in its cross-section of angular shape, so that it forms an angle-lever, of which the short arm *f* acts as clamping member and its long arm as lever.

The method for the production of flap sliding buckles is sub-divided in the example of performance in six working-phases.

During phase I two longitudinal slots *g*, parallel with the lateral edges of the flap *d*, *f* are punched out of the narrow strip of sheet metal intermittently moving forward in the direction of the arrow X, whilst at the same time and close to the lower end of each of the slots a keeper recess or socket *h* for the reception of the pivot, as well as a stiffening rib *i* for the buckle-bed *b* is pressed in.

During phase II the serrated edge of the flap *d*, *f* and of the bed *b* are punched in one common cut *k*, whereby simultaneously the laterally projecting pivots *m*, as well as the limiting cuts *o* of the bearing flanges or lugs *c*, inclined obliquely to the direction of movement, are formed at the ends of the cut *k* below the flange.

During phase III the serrated lower edge of the flap provided with pivots *m* at the ends is bent upwards, whilst the clamping arm *f* thus formed is inclined at an acute angle against the other arm during phase IV. It will be seen, that simultaneously with this bending over the pivots are brought up to the level of the flanges, so that during phase V, during which the lateral flanges or lugs *c* are bent at right angles to the bed *b*, the pivots *m* are made to engage in the recesses or sockets *h*.

During phase VI the buckle is completed and detached from the strip of sheet-metal by performing the cuts *r*, *s* indicated by dotted lines in phase V.

It will be seen, that the waste of material is quite minimal and the production is effected without any shrinkage of the lateral waste-strip *t*.

The whole of the working phases described are performed simultaneously, owing to the fact, that all the tools are attached to a common ascending and descending slide, with the result, that with each stroke of the press a completed buckle drops out of the machine.

I claim:

1. Method for producing flap sliding buckles which comprises punching a sheet metal strip to form a buckle bed member and a flap member in the strip, simultaneously forming hinge flanges with sockets in one member and complementary pivots upon the other member, then bending the flanges to pass the pivot members into the sockets so as to complete the hinge while the buckle members are still in the original metal strip and without lateral shrinkage of the latter, and finally severing the completed buckle from the strip.

2. Method for producing flap sliding buckles which comprises punching a sheet metal strip to form slots adjacent to and parallel with the lateral edges of the strips and keeper sockets adjacent to said slots, then punching the strip to produce cuts intersecting said slots and forming the serrated edges and bearing flanges containing said sockets of inchoate flap and bed members and to provide the flap member with pivots, then bending the flap member into angle form, then bending the flanges of the bed member at an angle thereto to bring the sockets thereof into engagement with the pivots of the flap member without bending the lateral margins of the strip or laterally shrinking said strip, and finally severing the completed buckle thus formed from the strip.

In testimony whereof I affix my signature.

HEINRICH HELLMANN.

Appendix D

(No Model.) 3 Sheets—Sheet 1.

J. A. WILSON, Jr.

MACHINE FOR MAKING AND ATTACHING BUCKLE ROLLS.

No. 356,055. Patented Jan. 11, 1887.

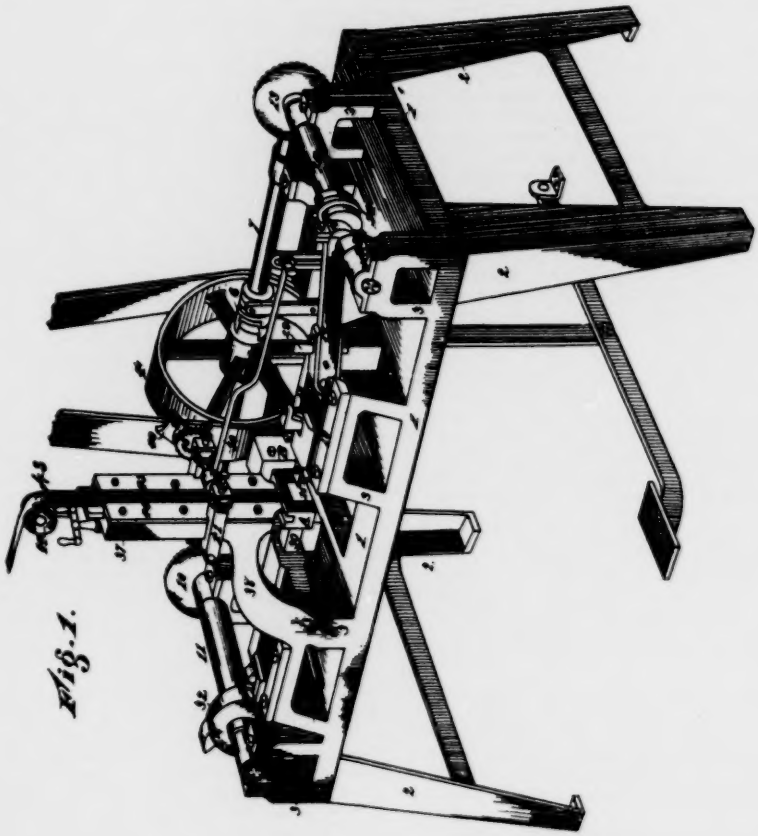


Fig. 1.

Attest
J. Watson Sims
Jam's Roebuck Jr.

Inventor
John A. Wilson Jr.
by Hood & Boyd
his Attorneys &c

Appendix D

(No Model.) 3 Sheets—Sheet 2.

J. A. WILSON, Jr.

MACHINE FOR MAKING AND ATTACHING BUCKLE ROLLS.

No. 356,055. Patented Jan. 11, 1887.

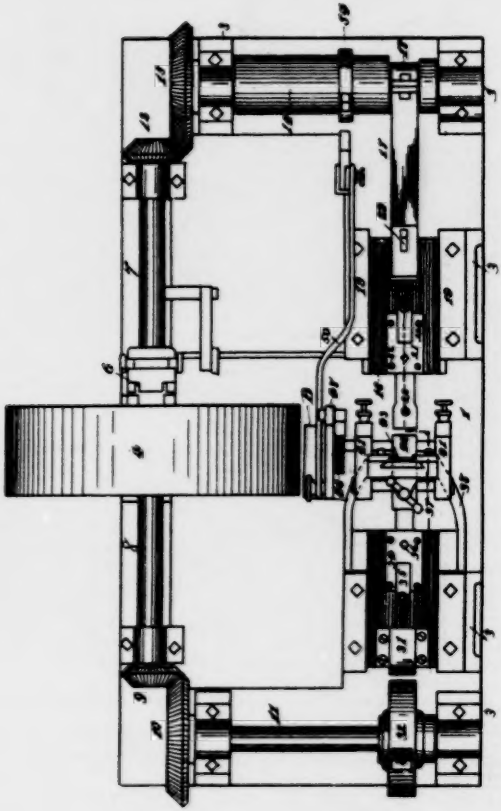


Fig. 2.

Attest
J. Watson Sims
Jno. L. Roebuck Jr.

Inventor
John A. Wilson Jr.
by Wood & Boyd
his attorneys &c

Appendix D

(No Model.) 3 Sheets—Sheet 3.

J. A. WILSON, Jr.

MACHINE FOR MAKING AND ATTACHING BUCKLE ROLLS.

No. 356,055. Patented Jan. 11, 1887.

Fig. 3.

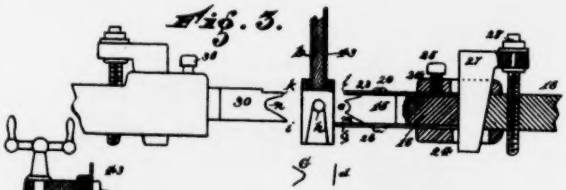


Fig. 7.

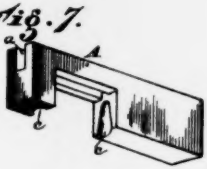


Fig. 4.

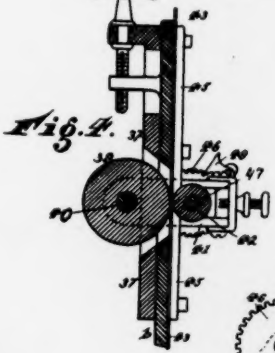


Fig. 5.

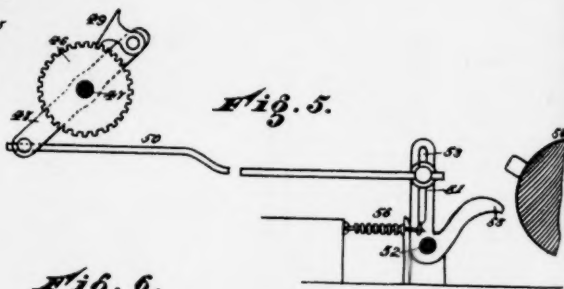
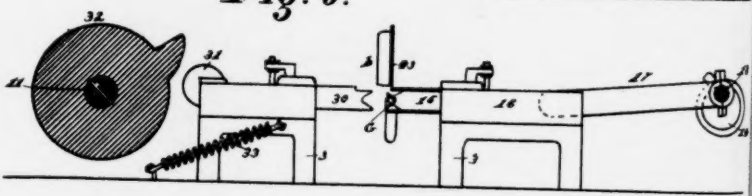


Fig. 6.



Attest

J. Waters Sims

Jno. S. Roebuck Jr.

Inventor

John A. Wilson Jr.

by Hord & Boyd

his Attorneys &c.

Appendix D

UNITED STATES PATENT OFFICE.

JOHN A. WILSON, JR., OF CINCINNATI, OHIO.

MACHINE FOR MAKING AND ATTACHING BUCKLE-ROLLS.

SPECIFICATION forming part of Letters Patent No. 356,055, dated January 11, 1887.

Application filed October 7, 1886. Serial No. 215,583. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. WILSON, Jr., a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Machines for Making and Attaching Buckle-Rollers, of which the following is a specification.

The object of my invention is to provide a machine which will cut from a strip of metal, which is fed to it, blanks for making the buckle-roller, and then automatically close the roller around the axis of the buckle. These results I accomplish by the features of invention herein described, which will be fully understood by reference to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my improved machine. Fig. 2 is a top plan view of the same. Fig. 3 is a central vertical section on line *x x*, Fig. 2. Fig. 4 is a sectional elevation of the feeding-rolls and frame. Fig. 5 is a sectional elevation of the feeding mechanism. Fig. 6 is a sectional elevation of the die-moving mechanism. Fig. 7 is a perspective view of the buckle-holder.

1 represents the frame of the machine; 2, the posts supporting the same.

3 represents brackets for supporting the working parts.

4 represents the main driving-pulley mounted upon a shaft.

6 represents clutch mechanism connected to the shaft and hub of the main pulley.

7 represents one end of the divided main shaft, to which the clutch mechanism is attached. 8 represents the opposite end of the main shaft.

9 represents a bevel-gear meshing with bevel 10, transmitting motion to shaft 11.

12 represents a bevel-gear on the opposite end of the main shaft, meshing with bevel 13 for driving shaft 14.

15 represents a knife-carrying die, which is mounted upon a stock, 16, operated by a pitman, 17, journaled on eccentric 18 of shaft 14. The stock 16 is supported and moves between guides 19, which may be made adjustable to take up lost motion, if desired.

20 represents a screw attaching the knife 23 to die 15.

21 represents an adjusting-plate, secured by screws 22, for clamping and holding the knife 23, attached to the top of the die. This knife is rigidly attached to and moves with the die 15.

In order to adjust the die forward and backward longitudinally, I provide jaws 24 and set-screw 25 for clamping the die-stock 16, to which the die strips 26 are attached by set-screw 25.

27 represents a longitudinally-adjusting key connected to the stock 16, and passing through the slot in the jaws 24 and a similar slot in the stock 16.

29 represents a key passing through the wrist of the pitman, taking up lost motion.

30 represents a die operated by a cam, 32, operating against the lug 31 on the heel of the stock.

33 represents a retractile spring for pulling the die 30 back to its normal position.

34 35 represent clamps for holding die 30 to its adjusted position, and are of similar construction to the similar parts of die 15.

36 represents a set-screw for attaching the die 30 in position.

The dies 15 and 30 are driven by mechanism on the opposite ends of the machine, and they are operated in connection with the metal-feeding mechanism, constructed as follows:

37 represents a metal-feeding stock supported by bracket 38 upon the frame of the machine.

39 represents a stationary feeding-roller journaled upon shaft 40, and mounted upon the frame by means of brackets 41. 42 represents a feed-roller adjustably mounted upon said brackets 41, opposite roller 39.

43 represents a metal strip passing over a spool, 44, thence down between the guides 45, adjustably secured to stock 37, thence between the rollers 39 and 42, and through the buckle-holder A. The metal is fed forward by means of ratchet 46, mounted upon shaft 47, which is the axis of roller 42.

48 represents a lever journaled on shaft 47, carrying a ratchet, 49.

50 represents a connecting-rod hinged at one end to lever 48, and loosely hinged to lever 51, which is journaled upon a center, 52. 53 represents a slot pierced in the upper arm

of said lever, so as to allow the connecting-rod 50 to move in its proper arc.

54 represents a cam connected to the shaft 14, engaging with the free end 55 of lever 51, for giving it a sudden reciprocation, drawing the lower end of lever 48 backward, carrying the pawl 49 forward, moving the wheel 46, and with it the feed-roller 42.

56 represents a retractile spring connected at one end to the frame and at the other to the lever 51, for driving the pawl back to its position on its ratchet.

The buckle-holder A is shown in perspective, Fig. 7.

The buckle-holder A is secured to a block, B, vertically under the feeding-stock, and provided with a slot, *a*, to receive the knife-stock, which is adjustably attached to the stock 36, and forms the base against which the strip of metal rests. Its lower edge forms a cutting-edge, which, together with the knife 23, forms a shear-blade for cutting off the strip of metal 43 when the jaw is advanced. The slot *a* is wide enough in cross-section to allow the strip of metal 43 to pass down below the edge of the knife, in the manner hereinafter explained.

Grooves *c* are formed in buckle-holder A, to receive the ends of the buckle and hold it in proper position for receiving the roller.

The mode of operation of the machine is as follows: A strip of metal is threaded through between the rollers, and resting against the front edge of the knife *b*. The machine, when it is in motion, is geared and adjusted so that the die 15 is carried forward in advance of die 30. Knife 23 cuts off the blank *d* just before the die-points *e* are advanced sufficiently to strike the blank. *g* represents a projecting end of the lower die-strip, upon which the blank rests until the concave of the jaw presses the blank into the V form, as shown at G, around the axis *h* of the buckle. As soon as this V-crimp is formed in the blank the die 30 is quickly advanced by the cam 32, which as it advances forms the blank G in a complete circle, the points *i k* fitting into the recesses *l m* of die 15, and the point *e* of die 15 fitting into the recess *n* of die 30, so as to form a complete cylinder of the metal. This operation of die 30 takes place before die 15 has commenced to recede. The die is then retracted and the metal fed forward by ratchet-and-pawl mechanism as the die 15 is again advanced for the second operation.

I claim—

1. A machine for making and attaching buckle-rollers, composed of the die 15, connected to and operated by suitable reciprocating mechanism, in combination with the buckle-holder and a finishing-die, 30, operated by reciprocating mechanism conjointly with the opposing die for forming a roll around the axis of the buckle, substantially as specified.

2. In a machine for shaping and attaching rollers on buckles, the reciprocating die 15, carrying the knife 23, and supporting-plate *g*, in combination with the buckle-holder and metal-feed device, substantially as specified.

3. In a machine for shaping and attaching rollers on buckles, the reciprocating die 15, carrying the knife 23, in combination with the buckle-holder and metal-feed device, substantially as specified.

4. In a machine for shaping and attaching rollers on buckles, the reciprocating die 15, provided with the recesses *l m*, in combination with the reciprocating die 30, having the concave points for fitting with the die 15 to shape the metal cylinder, substantially as specified.

5. In a machine for shaping and attaching rollers on buckles, the reciprocating die 15, provided with the recesses *l m*, in combination with the reciprocating die 30, having the concave points fitting the recesses, and the buckle-holder A, slotted to receive and hold the buckle to the dies, substantially as specified.

6. In a machine for shaping and attaching rollers on buckles, the die 15, driven by an eccentric, whereby it is held stationary after forming the initial bend of the roller-blank, in combination with the die 30, driven by a cam which advances it to meet the die 15, held in its advanced position, substantially as specified.

7. In combination with the reciprocating dies 30 and 15 and the buckle-holder A, the metal-feeding mechanism consisting of rollers, and a stock mounted above the dies, with mechanism for intermittently and automatically advancing the metal strip, substantially as specified.

8. In combination with the die-holder A, the metal-feeding stock, and knife *b*, the die 15, carrying knife 23, whereby the metal is sheared and given its initial shape by the advancing of said die, substantially as specified.

9. In a machine for forming rollers on buckles, the die-holder A, having the opening to receive the dies, with the grooves *c*, for holding the buckle, and slot *a*, for receiving the metal strip, substantially as specified.

10. In combination with the die 15 and the adjusting reciprocating stock 16, the clamp 24, for detachably securing said die, substantially as specified.

11. In combination with die 15 and stock 16, the adjusting taper key 27, connected thereto by passing through a slot in said die-stock, substantially as specified.

12. A machine for cutting and forming rollers around the axis of a buckle, composed, substantially, of a reciprocating die and knife, and connecting mechanism for moving it forward to cut the blank and give it an initial shape, and an automatic feeding mechanism for advancing the metal to the knife and die, in

combination with a die, 30, and the connecting mechanism for reciprocating it when the die 15 is held stationary, substantially as specified.

13. In combination with the buckle-holder and reciprocating die, the feeding-stock 36, supporting the adjustable knife *b*, and the feeding-rollers automatically driven in conjunction with the die-operating mechanism, substantially as specified.

In testimony whereof I have hereunto set my hand this 4th day of October, 1886.

JOHN A. WILSON, JR.

Witnesses:
ROBERT ZAHNER,
J. WATSON SIMS.

Appendix E

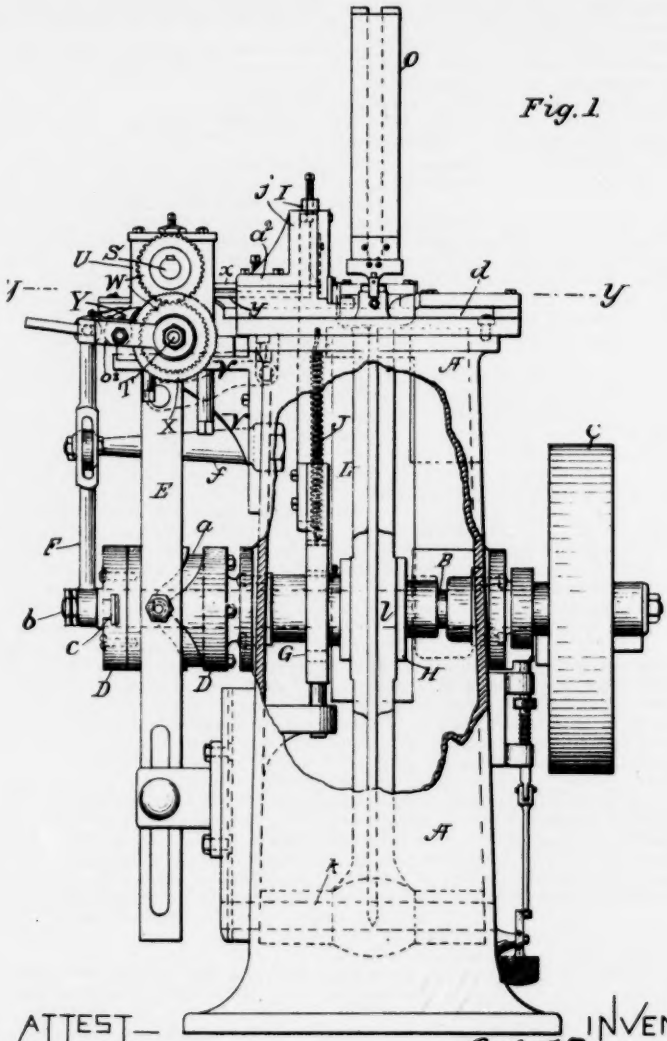
(No Model.) 6 Sheets—Sheet 1.

E. L. HOWE.

MACHINE FOR MAKING AND ATTACHING BUCKLE ROLLERS.

No. 366,585. Patented July 12, 1887.

Fig. 1.



ATTEST—

J. A. Wurdle

H. Hamm

INVENTOR

E. L. Howe

by his Atty's. G. N. McIntire

Appendix E

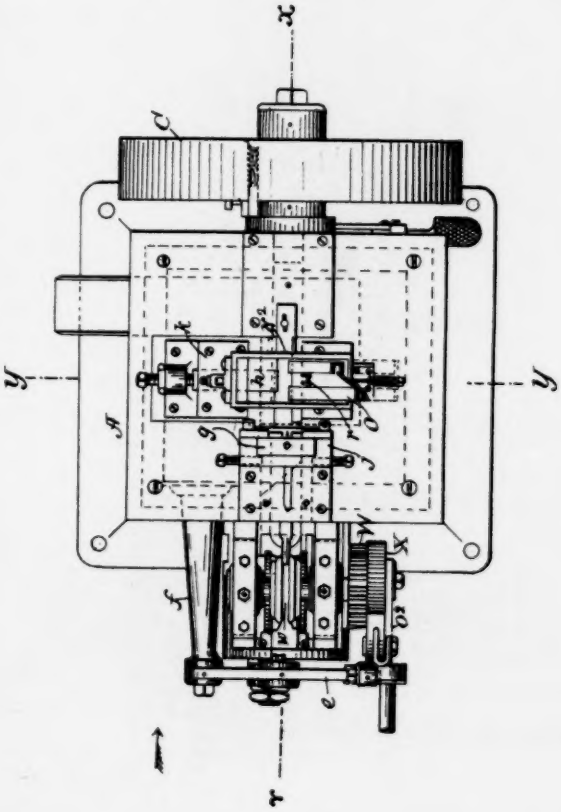
(No Model.) 6 Sheets—Sheet 2.

E. L. HOWE.

MACHINE FOR MAKING AND ATTACHING BUCKLE ROLLERS.

No. 366,585. Patented July 12, 1887.

Fig. 2.



ATTEST—
J. A. Hurdle
H. Hansen.

INVENTOR—
E. L. Howe.
By atty. J. N. McCarter

Appendix E

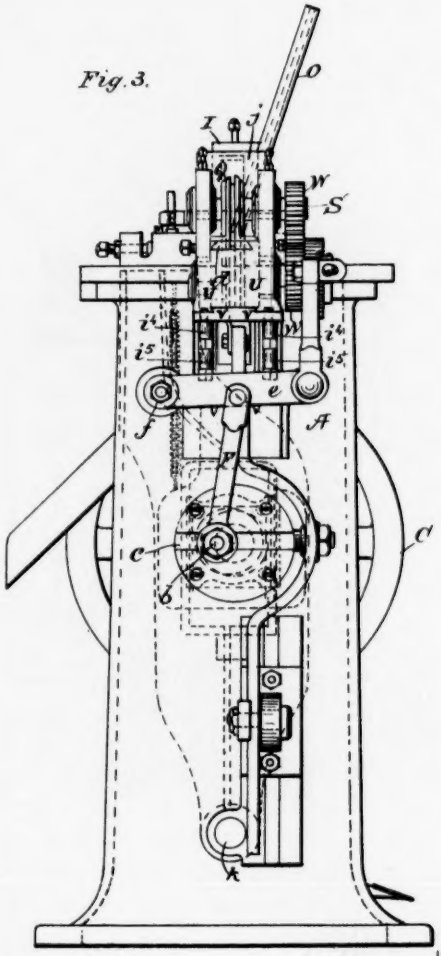
(No Model.) 6 Sheets—Sheet 3.

E. L. HOWE.

MACHINE FOR MAKING AND ATTACHING BUCKLE ROLLERS.

No. 366,585. Patented July 12, 1887.

Fig. 3.



ATTEST—
J. A. Nurdle
H. Hansen.

INVENTOR
E. L. Howe
by his atty
L. A. McGrath

Appendix E

(No Model.) 4 Sheets—Sheet 4.

E. L. HOWE.

MACHINE FOR MAKING AND ATTACHING BUCKLE ROLLERS.

No. 366,585. Patented July 12, 1887.

Fig. 4.

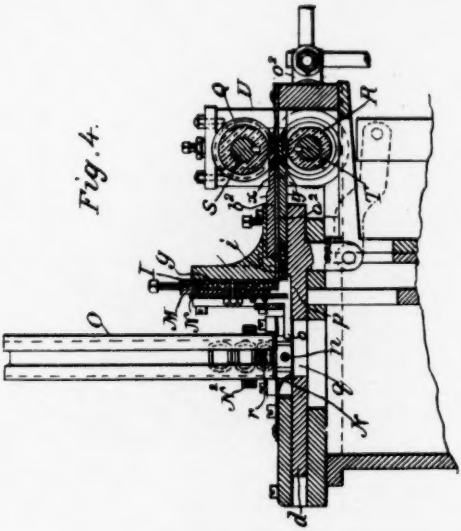
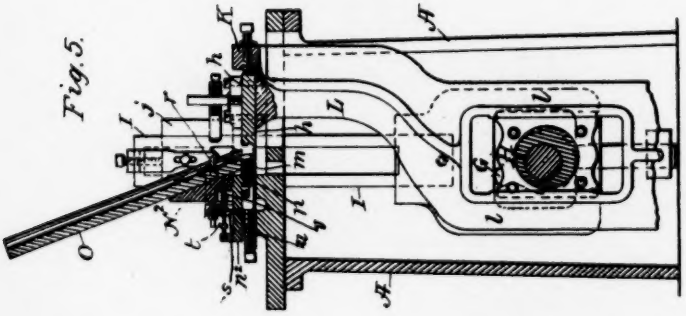


Fig. 5.



AT TEST:
J. H. Mundle
H. Hansen

INVENTOR
E. L. Howe
by his Atty's
Dodger & Sutton

Appendix E

(No Model.) 6 Sheets—Sheet 5.

E. L. HOWE.

MACHINE FOR MAKING AND ATTACHING BUCKLE ROLLERS.

No. 366,585. Patented July 12, 1887.

Fig. 6.

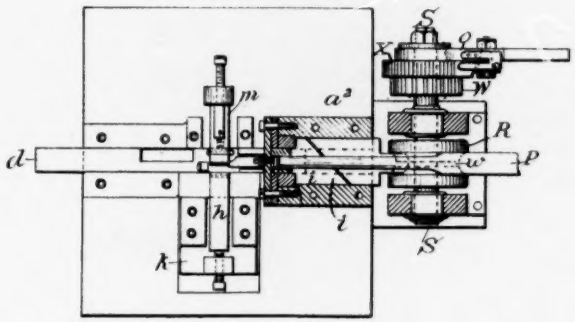


Fig. 7

Fig 8.

ATTEST—
J. A. Hurdle
H. Haniers

INVENTOR—
E. L. Howe
By atty J. N. McIntire

Appendix E

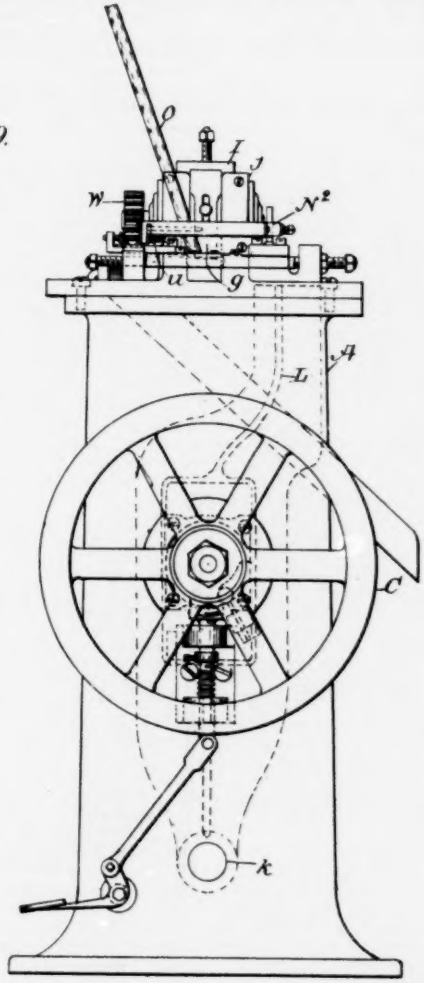
(No Model.) 6 Sheets—Sheet 6.

E. L. HOWE.

MACHINE FOR MAKING AND ATTACHING BUCKLE ROLLERS.

No. 366,585. Patented July 12, 1887.

Fig. 9.



ATTEST:
J. A. Hurdle
H. Hansen.

INVENTOR:
E. L. Howe.
By atty
J. N. McIntire

Appendix E

UNITED STATES PATENT OFFICE.

EUGENE L. HOWE, OF CLEVELAND, OHIO.

MACHINE FOR MAKING AND ATTACHING BUCKLE-ROLLERS.

SPECIFICATION forming part of Letters Patent No. 366,585, dated July 12, 1887.

Application filed March 1, 1887. Serial No. 229,276. (No model.)

To all whom it may concern:

Be it known that I, EUGENE L. HOWE, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a Machine for Putting the Rollers on Buckles; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

My invention has for its object to provide for use an automatic machine which, upon being merely supplied with a strip of sheet metal from which to make the rollers and a quantity of the buckle-frames to be rollered, will rapidly and perfectly make the sheet-metal roller tubes and apply them to the buckle-frames, the latter, with the properly-applied sheet-metal rollers, being rapidly discharged from the machine in a finished condition.

Previous to my invention it has been customary to employ for the purposes of making such sheet-metal tubular rollers and applying them properly to the buckle-frames at least two separate machines, one for cutting out and slightly upsetting the sheet-metal blanks designed to compose the rollers and the other for forming the blanks separately into tubular devices encircling one of the bars of each of the buckle-frames, the organization and operation of the machine for bending the sheet-metal blanks into tubes round about the buckle-frame bars having been such that it was necessary to have the buckle-frames applied separately and successively to the machine by hand, and in like manner removed therefrom after each operation of placing a roller on a buckle-frame.

I propose to effect both the making of the roller-blanks and the formation of said blanks into rollers on the buckle-frames by a single machine, which shall not only be perfectly automatic in its operations, and shall merely require to be fed with strips of sheet metal for the manufacture of the rollers and supplied with a quantity of buckle-frames, but which shall also be capable of turning out the rollered buckle-frames faster than they can be made by the methods and machinery heretofore used and without the employment of any skilled hand labor; and to this purpose my invention consists in the novel organization of machine and in the combinations of devices therein comprised, that will be found described and shown in this application, and that will be particularly pointed out and most clearly defined in the claims of this specification.

To enable those skilled in the art to which my invention relates to make and use a machine according thereto, I will now proceed to more fully explain the nature of my said invention and the best mode now known to me of carrying the same into effect, referring by letter to the accompanying drawings, which form part of this specification, and in which I have shown my invention carried out in that form of machine which is the best now known to me, and in which I have so far successfully practiced my invention with satisfactory results.

In the drawings, Figure 1 is a front elevation of a machine such as I now have in practical operation embracing my invention. Fig. 2 is a top view of the same. Fig. 3 is a side elevation taken from the point of view indicated by the arrow at Fig. 2. Fig. 4 is a partial vertical longitudinal section at the line *x x* of Fig. 2, designed to show more particularly the arrangement and to illustrate the operations of certain of the working parts of the machine. Fig. 5 is a partial vertical cross-section at the line *y y* of Fig. 2. Fig. 6 is a partial horizontal section at the line *y y* of Fig. 1. Fig. 7 is a perspective view of one of the sheet-metal roller-blanks made in the machine and by it subsequently applied to one of the buckle frames supplied to the machine. Fig. 8 is a perspective view of one of the rollered buckle-frames turned out by the machine. Fig. 9 is a view showing the side opposite to that seen at Fig. 3.

At Fig. 1 I have shown a portion of the hollow pedestal-like metallic frame of the machine as broken away for the purpose merely of giving a sight in said view at some of the mechanism located within said hollow main frame, and in the several figures I have used the same letter of reference to indicate always the same part of the machine.

A is the main frame of the machine, within and on which are mounted all the working

Appendix E

parts, and which, by preference, I have made of cast-iron, hollow, and in the pedestal-like shape or design shown. Passing through this hollow frame from side to side, as shown, and provided with suitable bearing-boxes therein, is the main shaft B, which at one end is provided with a drive-pulley, C, through the medium of which the necessary motive power to run the machine is applied from a suitable drive-belt. On the opposite end of said shaft B is secured a combined cam and crank-head, D, in the periphery of which is a groove, *a*, that during the rotation of D actuates, through the medium of a rocking arm, E, the blank carrier or slide *d*, and in the outer end or head of which is a diametrically-arranged slot or recess, *c*, within which is secured (at any desired point of adjustment longitudinally therein) a wrist-pin, *b*, to which is coupled the lower end of a pitman, F, the upper end of which is connected to a vibratory arm or bar, *e*, that is fulcrumed at one end to a post, *f*, projecting rigidly from the main frame A, and that carries at its other end the means for intermittingly driving the mechanism for feeding in the sheet-metal blank-strip, all as will be presently explained. On that portion of the said drive-shaft B that is located within the hollow main frame A are secured, at the proper distances apart, two cams, (marked, respectively, G and H,) the former of which operates to drive the male (and only movable) member *g* of the blank-cutting dies, and the latter of which drives the movable member *h* of the pair of bending or roller-forming dies.

The movable blank-cutting die *g* is mounted securely (but removably) within the upper part of a head-stock or vertically-moving carriage, I, the lower portion or depending leg of which is yoked around the periphery of the aforesaid cam G, as shown, and by the rotative action of said cam the said carriage and its attached cutter *g* are caused to descend at the right times and to the proper extent to effect the cutting off of the sheet-metal blanks from which to make the rollers, the said cutter-carriage being guided within stationary ways *j*, and being lifted (after each depression by said cam) by a strong spiral or other spring, J, which returns the cutter *g* to its uppermost (normal) position rapidly in order that it may quickly get out of the pathway of the incoming sheet-metal strip from which the roller-blanks are successively cut in as rapid succession as practicable in the machine shown.

i is the lower and stationary cutter, with which the cutter *g* co-operates, and it is securely (but removably) fastened within a seat formed in the top plate of the main frame.

The cam H actuates the movable member *h* of the bending-dies through the medium of the following-named devices; Said die *h* is mounted in a head-stock or holder, K, with which the upper end of the rocking arm L is either formed or provided, and the lower end of said arm is pivoted to a fixed fulcrum, *k*, near the bottom of the main frame, as illustrated, while the frame or yoke-like portion *l* of said arm embraces the periphery of the cam H, and thus enables the latter to vibrate said arm upon its fulcrum *k* and give the proper throw to the die in the upper end of said arm at the right time.

For the purpose of varying the length of stroke of the upper end of arm L to suit the requisite action of dies *h* for operating on different-sized blanks, the pivotal pin *k* may be raised or lowered relatively to the cam H, and in adjusting the machine for such variations in the diametrical measurement of the rollers to be formed the stationary bending-die *m*, or the counterpart of *h*, will of course be changed also. This stationary bending-die *m* is secured in place so as to have its operative end come in just the proper relationship to the blank feeder or carrier *d*, and to the lower end of the feed-chute of the machine, as will be presently more fully explained, and it is perforated longitudinally and about centrally with a hole for the reception of the needle *n*, (see Fig. 5,) which operates in a manner and for a purpose to be hereinafter described.

The blank-conveying slide *d* is composed of a metallic bar substantially rectangular in cross-section, and it is formed, as shown, with a depression, *o*, in its top surface, having a vertical shoulder at *p*, and with a hole through it at *q*, through which the rollered or finished buckle-frame may be discharged. Said slide *d* reciprocates beneath and with its top surface in close proximity to the under side of the stationary cutting-die *i*, and to the under side of an adjustable stop finger or device, N, which serves to determine the point to which the roller-blank can be fed by the slide *d*, (see Fig. 4,) and to thus insure the placement of the blanks in exactly the right place endwise relatively to that bar of the buckle-frame around which the blank is to be bent and to the bending-dies *h* and *m*, that are to form the roller.

N^2 is a rectangular frame which is yoked around or embraces the lower part of the inclined feeder-chute O, and that is secured at one end to the head K, so as to move therewith. From that end of the frame N^2 which is opposite to its point of attachment to head K project inwardly two retaining fingers or needles, *r*, which serve to periodically support the column of buckle-frames in the feeder-chute O, (in a manner to be presently explained,) and at the same end of said frame N^2 is a projection, *s*, that engages with a stop or lug, *t*, on the rear end of the needle-bar n^1, to pull the operative end or point of said needle wholly within the perforated die *m*, (for a purpose to be presently stated,) and that also comes into contact with the device *u*, which compresses the spiral spring *v*, that actuates the needle *n* for the purpose of insuring the extrication from the stationary roller-forming

die *n* of the rollered end of the finished buckle-frame.

The feed-chute O is simply an inclined guide-way, made preferably in about the form shown, of sufficient height to contain a supply-column of buckle-frames placed therein, (by hand or otherwise,) and of such construction that, while the column of frames placed therein can slide right down through said chute, they cannot overlap each other therein. The lower end of this chute is located a short distance above the plane in which lie the bending-dies *k* and *m*, and the column of frames in the feeder above the lowermost and finished frame, which has to be discharged by gravity, is always supported by the fingers *r*.

The mechanism or means for intermittingly feeding in the strip or ribbon of sheet metal P consists of two die-rolls, Q and R, which also perform the office of rolling the strip into the proper form for the blanks to be subsequently cut from it. The strip or ribbon P is rolled by the wheels Q R into such form that when subsequently cut crosswise into short pieces or blanks each piece will be of the shape illustrated at Fig. 7.

As will be clearly seen, the periphery of the upper wheel or roll, Q, is convex in cross-sectional profile, while that of the lower roll, R, is concave, and each roll has turned or cut in its face a deep central groove, *w*. These rolls are fast on the short shafts or spindles S and T, that are mounted to turn in suitable journal-boxes in the stand U, and said stand, as clearly shown in the drawings, is mounted upon and engages with the dovetailing way or portion of the horizontal part of a bracket, V, (that is securely bolted, as shown, to the main frame or pedestal A of the machine,) in such manner as to slide on said bracket when not held stationary by the securing bolts or screws i^4 and i^5. These securing-bolts, as shown, have their upper threaded ends tapped into the base of the adjustable stand U and their body portions passed through slots in the top of the bracket V, after a fashion well known, so that on loosening the four screws the stand U may be adjusted within the limits permitted by the length of the slots to any desired position, when by turning home the screws i^4 and i^5 the heads of the latter will come to bearings against the under surface of the top part of the bracket V, thereby securely clamping and holding rigidly in place the adjustable stand U. The purpose and effect of this adjustability of the stand U, which carries the spindles S and T of the feeding and bending rolls Q and R, will be hereinafter fully explained.

The shafts or spindles S and T are geared together, as clearly shown, by means of spur-pinions W.

On the front end of the upper spindle, S, is keyed a ratchet-wheel, X, with which engages a spring pawl device, Y, mounted on the vibratory end of the arm or bar e^3, hereinbefore referred to as carrying "the means for intermittingly driving the mechanism for feeding in the sheet-metal blank-strip."

Within the centrally-located peripheral grooves, *w*, of the die-rolls Q and R lie (so as not to interfere with the free rotation of the rolls) the upper and lower guide rods or bars, *x* and *y*, which serve to hold and properly guide the leading end of any freshly-fed-in blank-strip, and prevent the same from either overlapping or getting beneath the tail end of the preceding blank-strip. These guide-rods *x* and *y* project, respectively, from the lower channeled-out metallic block a^2, on which the rolled blank-strip rests and travels after it leaves the die rolls, and the cap-plate b^2, which is formed with a rib on its lower surface to fit into and hold down the rolled blank, and which cap-plate is securely bolted down on top of the block a^2.

The space between the adjacent surfaces of the guide-rods *x* and *y* is just sufficient to permit the placement and movement between said surfaces of the sheet-metal blank strip or ribbon P, so that these rigid devices perform the important office of enforcing the perfect abutment of the leading end of a freshly-supplied ribbon against the tail end of the preceding strip, in order that the leading end of every blank-strip shall start in just right, and that neither the cutters nor the feeding mechanism shall be subjected to undue strain, nor unnecessary trouble be made by surplus or waste pieces being cut from the leading ends of the ribbons.

The lower stationary cutter, *i*, has its upper surface channeled out similarly to the top of the block a^2, and the adjacent edges or walls of the said cutter and the said block lie in parallel lines oblique to the line of travel of the rolled blank-strip. The object of this obliquity of the adjacent edges of these pieces is this, that even after the space or opening between said edges of said parts shall have become very considerable by repeated sharpening of the cutting-edge of the piece *i*, (which of course has to be always set up to a given relationship with the moving cutter *g*,) there will be no liability of the leading end of the blank-strip catching against the rear edge of the piece *i*.

The general operation of the machine may be thus explained: The feed chute O having been filled with buckle-frames, (and the supply-column kept up during the running of the machine,) and the blank-strip P having been fed into the bite of the die-rolls and feeders Q and R, and the necessary power having been applied to drive the pulley C, the continuous rotation of the main shaft B causes the rolls Q R, through the action of the operative parts hereinbefore described as connecting the crank-head D and its wrist-pin *b* with the mechanism for turning the shaft of the upper die-roll, to feed the blank-strip intermittingly to the blank-cutting dies *g* and *i*, and to at the same

time give to the strip P the shape which the blanks are to have. Each time that the leading end of the strip P shall have been fed past the cutting-dies the proper distance for the production of a blank of the predetermined length the descent of the cutter *g*, effected by the means hereinbefore described, severs from the strip a blank, and the leading end of the piece thus cut off is forced downward to an extent equal to the downward thrust or stroke of the cutter *h* by means of a push-plate, M, which is secured to the body of the upper die, *g*, some distance from the plane in which its cutting-edge travels up and down. The purpose of this push-plate M is to prevent any lagging or upward reactive movement of the leading end of the blank during the cutting operation, and to insure the deposition of the blank in proper shape upon the blank-conveying slide *d*, onto which the severed stock falls. The blank thus cut falls onto the depressed or recessed portion *c* of the slide *d*, (the latter having just been forced back in its final guideways to the proper position,) and the latter, starting immediately afterward on its blank-feeding stroke or movement, (actuated by the vibrating arm E, that is driven by the groove-cam at D, as hereinbefore explained,) carries the blank along until its leading end comes against the stop-finger N, when the slide *d* comes to rest, the blank resting thereon and confined endwise between said stop-finger M and the shoulder *p* of the slide. The blank having now arrived at the proper position, the column of buckle-frames in the chute O is released from the hold-up fingers *r* and descends by gravity until the base of the column—*i. e.*, the lower bar of the bottom frame—rests upon the upper concave surface of the roller-blank, the upturned edges of which blank are now to be acted upon by the bending-dies, and one of which edges has been placed in close proximity to the operative surface of the stationary one, *m*, of said dies.

With the blank and buckle-frame and the parts of the machine just above referred to all in the positions just explained, the moving bending-die *h* now comes up against one of the upturned edges of the blank, (said die being actuated by the means hereinbefore explained,) and the latter is squeezed between the faces of the dies *h* and *m* until the blank shall have been bent into a cylinder embracing the bar of the buckle-frame and conforming to that formed by the adjoining semi-cylindrical die-surfaces. The transformation thus of the dish-shaped blank into a cylinder around the lowermost bar of the bottom frame of the column is, however, effected by the dies *h* and *m*, with the assistance of the needle *n* of the die *m*, which needle projects from the working-face of the die *m* far enough to hold down (or to prevent the rising of) the upturned edge of the blank that is adjacent to said die, while the die *h* bends upwardly and over (to meet said edge) the other edge of the blank, the point of said needle being automatically withdrawn just as the edges of the bent-up blank are about to come to a perfect meeting under the action of the dies *h* and *m*. While these dies are completing the roller thus formed out of the blank and around the bar of the frame that rested on said blank, the blank-feeding slide *d* moves again in the direction to procure another blank, and just as its cut-away portion or the hole *q* therein gets immediately under the finished roller the latter is released from the grip of the bending-dies by the back movement of die *h*, and the finished roller, together with the buckle-frame to which it has been applied, drops through the opening at *q* and falls into a suitable receptacle, (or into a trough leading to such receptacle.) At the same time that the finished or rollered frame thus makes its exit from the machine the rest of the supply-column, of course, also descends by gravity. Before the lowermost one of the rest can have gotten quite to the lower end of the feed-chute the retaining-fingers *r* will have been passed through the central opening of the lowermost buckle-frame, (by the back movement of the die-head K, to which the frame N' is secured,) and the further descent of the supply-column arrested by the upper bar of the lowermost frame catching onto said detaining-fingers *r*. At the time of the releasement of the finished roller from the grip of the bending-dies any liability of the finished article to stick or hang in the concave face of the die *m* is effectually overcome and the forcible exit of the finished roller from said die-surface effected by the forward end of the needle *n*, which is suddenly thrust against the finished roller as said needle is forced back to its original position by the backward stroke of the die holder K and the frame N' fastened thereto.

The movements of the needle *n* are effected as follows: As the frame N' moves forward its lug *s* comes into contact with the adjustable stop *t* of the needle device in time to positively withdraw the point of the needle from over the edge of the blank, being bent up just as the edges of the bent blank are about to come to a perfect meeting or contact in the completion of the roller. As the frame N' then immediately reverses its motion, the actuating-spring *v* of the needle device operates to throw the needle back again into its former position, ready to act as a hold-down device on the next blank to be brought up by the slide *d*; but as the action of this spring might not be either quick enough, when operating normally, to force out the finished roller and buckle-frame in case of any sticking in the face of die *m* the lugs of the frame N' comes quickly against the movable abutment *u* of said spring, and by suddenly compressing the spring increases the force and rapidity of its initial action.

It will be understood that to make the blanks longer or shorter, for the purpose of producing

longer or shorter buckle-rollers, the feed must be varied by changing the throw of the crank-pin *b*, so as to give more or less motion to the actuating-pawl of the ratchet-wheel X, and hence more or less movement to the feeding and shaping rolls Q R, and that in varying the length of blank the stop-finger N must be adjusted accordingly and the throw of the slide *d* varied (by adjusting the fulcral point of the arm E) so as to bring and place the blank (of a different length) centrally endwise with the bending-dies and the buckle-frame to be rollered.

The feed-chute O may have its guideways set to match frames of different widths, or the chute proper may be removable and different-sized chutes applied for different-sized buckle-frames. In this way, by the means shown and described, one machine may be adjusted to roller several sizes of buckle-frames with rollers of different lengths, and also of somewhat different diameters.

If deemed expedient, a material variation in the diameters of the rollers that may be made on one machine may be effected by having more than one size of shaping-rollers Q R, and substitute parts for the guides between which the rolled blank-strip is passed, and changeable male cutting-off dies.

The object of having the stand in which the roller-dies Q R are mounted made adjustable is that these rolls may be always set at the proper distance from the cutting-dies, according to the length of the blanks to be made, for it is quite important to have the distance between a plane passing through the axes of these rolls and the plane in which the blank-strip is cut divisible without any remainder by the measure of length of the blank to be made—that is to say, if the blanks are to be cut one inch long, the distance between the points above mentioned must be a greater or less number of inches. If the blanks are to be an inch and a quarter long, the said distance must be such that it can be exactly divisible into parts of equal length, each one of which will measure an inch and a quarter. The necessity, or, rather, the great advantage, of such relationship between the rolls and the cutters is that there will never be any piece cut from the leading end of the ribbon or blank strip that will be insufficient in length to form a roller, and that will consequently have to be disposed of or gotten out of the way while the machine is running.

If the ribbons or blank-strip be cut from a sheet of metal which shall first have been cut to the exact length to make a given number of blanks of a certain size, then there will be no waste pieces or imperfect blanks cut, even from the tail ends of the ribbons fed into the machine.

Of course many of the details of construction of the machine shown and described may be varied more or less without changing its principle of construction and mode of operation, and it will be understood that some of the novel features of my machine may be used separately or in a machine different from mine as to other features with more or less of the advantages due to my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a pair of rolls, Q R, adapted to simultaneously feed along a strip of sheet metal and to bend the latter widthwise, a mechanism for cutting the said strip crosswise into roller-blanks, all substantially as hereinbefore set forth.

2. The combination, with dies or cutters for severing a strip of metal crosswise and a pair of rolls for feeding the strip to the cutting device with an intermittent motion, of means for adjusting the feed-rolls relatively to the cutting device, substantially as and for the purpose hereinbefore explained.

3. In combination with means for feeding in the blank-strip P and means for cutting up said strip into roller-blanks, a mechanism for bending the blank up into a roller around the bar of the buckle-frame and a blank-conveying slide or carrier, *d*, adapted to successively receive the blanks as they are made and deliver them to the bending mechanism, all substantially as set forth.

4. The combination, with a mechanism for receiving and bending into cylindrical form a previously-made roller-blank, and adapted to permit the automatic discharge therefrom of the finished roller and the buckle-frame to which it has been applied, of a feeder mechanism for automatically supplying buckle-frames successively to the said roller-blank receiving and bending mechanism, substantially as hereinbefore set forth.

5. In a machine for making sheet-metal blanks for forming the rollers on buckle-frames, the combination of a mechanism for feeding in and bending lengthwise the blank-strip, means for cutting up the bent strip into blanks equal in length to the length of the rollers to be made, a carrier device for feeding the cut-off blanks to the locality at which they are to be formed into cylinders around the buckle-frame bars, and a feeder mechanism for supplying the buckle-frames one at a time to the roller-forming device, all substantially as hereinbefore set forth.

6. In combination with a pair of rollers adapted to successively feed strips of sheet metal supplied to them and a cutting mechanism for cutting up the said strips crosswise, guide bars *x* and *y*, the whole arranged to operate in substantially the manner specified, for the purpose set forth.

7. In a machine for forming roller-blanks from blank-strips fed in and for bending said blanks into shape on the buckle-frames supplied to said machine, the combination, with the blank-cutting mechanism, of adjustable feed-rolls, a blank carrier or slide, *d*, the throw of which may be varied, a blank-bending

Appendix E

mechanism, and an adjustable stop-finger, M, the whole arranged to operate substantially as set forth.

8. The combination, with the bending-dies, the device *d* for supporting the blank and the buckle-frame deposited thereon, as specified, and the mechanism for automatically supplying the buckle-frames, as set forth, of the needle-bar *n*, and the means described for actuating said needle in both directions, for the purposes specified.

In witness whereof I have hereunto set my hand this 18th day of November, 1886.

E. L. HOWE.

In presence of—
ISAAC GOLDSMITH,
HENRY GOLDSMITH

Appendix F

A POOR MAN'S TALE OF A PATENT

By Charles Dickens

(Published in a British Magazine in 1850)

I AM not used to writing for print. What working-man, that never labors less (some Mondays, and Christmas Time and Easter Time excepted) than twelve or fourteen hours a day, is? But I have been asked to put down, plain, what I have got to say; and so, I take pen-and-ink, and do it to the best of my power, hoping defects will find excuse.

I was born, nigh London, but have worked in a shop at Birmingham (what you would call Manufactories, we call shops), almost ever since I was out of my time. I served my apprenticeship at Deptford, nigh where I was born, and I am a smith by trade. My name is John. I have been called "Old John" ever since I was nineteen year of age, on account of not having much hair. I am fifty-six year of age at the present time, and I don't find myself with more hair, nor yet with less, to signify, that at nineteen year of age aforesaid.

I have been married five and thirty year, come next April. I was married on All Fool's Day. Let them laugh that win. I won a good wife that day, and it was as sensible a day to me as ever I had.

We have had a matter of ten children, six thereof are living. My eldest son is enginer in the Italian steam-packet "Mezzo Giorno, plying between Marseilles and Naples, and calling at Genoa, Leghorn, and Civita Vecchia." He was a good workman. He invented a many useful little things that brought him in—nothing. I have two sons doing well

at Sydney, New South Wales—single, when last heard from. One of my sons (James) went wild and for a soldier, where he was shot in India, living six weeks in hospital with a musket-ball lodged in his shoulder-blade, which he wrote with his own hand. He was the best looking. One of my two daughters (Mary) is comfortable in her circumstances, but water on the chest. The other (Charlotte), her husband ran away from her in the basest manner, and she and her three children live with us. The youngest, six year old, has a turn for mechanics.

I am not a Chartist, and I never was. I don't mean to say but what I see a good many public points to complain of, still I don't think that's the way to set them right. If I did think so, I should be a Chartist. But I don't think so, and I am not a Chartist. I read the paper, and hear discussion, at what we call "a parlor," in Birmingham, and I know many good men and workmen who are Chartists. Note. Not physical force.

It won't be took as boastful in me, if I make the remark (for I can't put down what I have got to say, without putting that down before going any further), that I have always been of an ingenious turn. I once got twenty pound by a screw, and it's in use now. I have been twenty year, off and on, completing an Invention and perfecting it. I perfected of it, last Christmas Eve at ten o'clock at night. Me and my wife stood and let some tears fall over the Model, when it was done and I brought her in to take a look at it.

A friend of mine, by the name of William Butcher, is a Chartist. Moderate. He is a good speaker. He is very

animated. I have often heard him deliver that what it, at every turn, in the way of us working-men, is, that too many places have been made, in the course of time, to provide for people that never ought to have been provided for; and that we have to obey forms and to pay fees to support those places when we shouldn't ought. "True," (delivers William Butcher), "all the public has to do this, but it falls heaviest on the working-man, because he has least to spare; and likewise because impediments shouldn't be put in his way, when he wants redress of wrong or furtherance of right." Note. I have wrote down those words from William Butcher's own mouth. W. B. delivering them fresh for the aforesaid, purpose.

Now, to my Model again. There it was, perfected of, on Christmas Eve, gone nigh a year, at ten o'clock at night. All the money I could spare I had laid out upon the Model; and when times was bad, or my daughter Charlotte's children sickly, or both, it had stood still, months at a spell. I had pulled it to pieces, and made it over again with improvements, I don't know how often. There it stood, at last a perfected Model as aforesaid.

William Butcher and me had a long talk, Christmas Day, respecting of the Model. William is very sensible. But sometimes cranky. William said, "What will you do with it, John?" I said, "Patent it." William said, "How patent it, John?" I said, "By taking out a Patent." William then delivered that the law of Patent was a cruel wrong. William said, "John, if you make your invention public, before you get a Patent, any one may rob you of the fruits of your hard work. You are put in a cleft stick, John. Either you must drive a bargain very much against your-

self, by getting a party to come forward beforehand with the great expenses of the Patent; or, you must be put about, from post to pillar, among so many parties, trying to make a better bargain for yourself, and showing your invention, that your invention will be took from you over your head." I said, "William Butcher, are you cranky? You are sometimes cranky." William said, "No, John, I tell you the truth;" which he then delivered more at length. I said to W. B. I would Patent the invention myself.

My wife's brother, George Bury of West Bromwich (his wife unfortunately took to drinking, made away with everything, and seventeen times committed to Birmingham Jail before happy release in every point of view), left my wife, his sister, when he died, a legacy of one hundred and twenty-eight pound ten, Bank of England Stocks. Me and my wife never broke into that money yet. Note. We might come to be old and past our work. We now agree to Patent the invention. We said we would make a hole in it—I mean in the aforesaid money—and Patent the invention. William Butcher wrote me a letter to Thomas Joy, in London. T. J. is a carpenter, six foot four in height, and plays quoits well. He lives in Chelsea, London, by the church. I got leave from the shop, to be took on again when I come back. I am a good workman. Not a Teetotaller; but never drunk. When the Christmas holidays were over, I went up to London by the Parliamentary Train, and hired a lodging for a week with Thomas Joy. He is married. He has one son gone to sea.

Thomas Joy delivered (from a book he had) that the first step to be took, in Patenting the invention, was to prepare a petition unto Queen Victoria. William Butcher had

delivered similar, and drawn it up. Note. William is a ready writer. A declaration before a Master in Chancery was to be added to it. That, we likewise drew up. After a deal of trouble I found out a Master, in Southampton Buildings, Chancery Lane, nigh Temple Bar, where I made the declaration, and paid eighteen-pence. I was told to take the declaration and petition to the Home Office, in Whitehall, where I left it to be signed by the Home Secretary (after I had found the office out), and where I paid two pound, two, and sixpence. In six days he signed it, and I was told to take it to the Attorney-General's chambers, and leave it there for a report. I did so, and paid four pound, four. Note. Nobody all through, ever thankful for their money, but all uncivil.

My lodging at Thomas Joy's was now hired for another week, whereof five days were gone. The Attorney-General made what they called a Report-of-course (my invention being, as William Butcher had delivered before starting, unopposed), and I was sent back with it to the Home office. They made a Copy of it, which was called a Warrant. For this warrant, I paid seven pound, thirteen, and six. It was sent to the Queen, to sign. The Queen sent it back, signed. The Home Secretary signed it again. The gentleman throwed it at me when I called, and said, "Now take it to the Patent Office in Lincoln's Inn." I was then in my third week at Thomas Joy's living very sparing, on account of fees. I found myself losing heart.

At the Patent Office in Lincoln's Inn, they made "a draft of the Queen's bill," of my invention, and a "docket of the bill." I paid five pound, ten, and six, for this. They "en-

grossed two copies of the bill; one for the Signet Office, and one for the Privy-Seal Office." I paid one pound, seven, and six, for this. Stamp duty over and above, three pound. The Engrossing Clerk of the same office engrossed the Queen's bill for signature. I paid him one pound, one. Stamp-duty, again, one pound, ten. I was next to take the Queen's bill to the Attorney-General again, and get it signed again. I took it, and paid five pound more. I fetched it away, and took it to the Home Secretary again. He sent it to the Queen again. She signed it again. I paid seven pound, thirteen, and six more, for this. I had been over a month at Thomas Joy's. I was quite wore out, patience and pocket.

Thomas Joy delivered all this, as it went on, to William Butcher. William Butcher delivered it again to three Birmingham Parlors, from which it got to all the other Parlors, and was took, as I have been told since, right through all the shops in the North of England. Note. William Butcher delivered, at his Parlor, in a speech, that it was a Patent way of making Chartists.

But I hadn't nigh done yet. The Queen's bill was to be took to the Signet Office in Somerset House, Strand—where the stamp shop is. The Clerk of the Signet made "a Signet bill for the Lord Keeper of the Privy Seal." I paid him four pound, seven. The Clerk of the Lord Keeper of the Privy Seal made "a Privy-Seal bill for the Lord Chancellor." I paid him, four pound, two. The Privy-Seal bill was handed over to the Clerk of the Patents, who engrossed the aforesaid. I paid him, five pound, seventeen, and eight; at the same time, I paid Stamp-duty for the Patent, in one lump, thirty pound. I next paid for "boxes for the Patent," nine and sixpence. Note. Thomas Joy would have made

the same at a profit for eighteen-pence. I next paid "fees to the Deputy, the Lord Chancellor's Purse-bearer," two pound, two. I next paid "fees to the Clerk of the Hanaper," seven pound, thirteen. I next paid "fees to the Deputy Clerk of the Hanaper," ten shillings. I next paid, to the Lord Chancellor again, one pound, eleven, and six. Last of all, I paid "fees to the Deputy Sealer, and Deputy Chaff-wax," ten shillings and sixpence. I had lodged at Thomas Joy's over six weeks, and the unopposed Patent for my invention, for England only, had cost me ninety-six pound, seven, and eightpence. If I had taken it out for the United Kingdom, it would have cost me more than three hundred pound.

Now, teaching had not come up but very limited when I was young. So much the worse for me you'll say. I say the same. William Butcher is twenty year younger than me. He knows a hundred year more. If William Butcher had wanted to Patent an invention, he might have been sharper than myself when hustled backwards among all those offices, though I doubt if so patient. Note. William being sometimes cranky, and consider porters, messengers, and clerks.

Thereby I say nothing of my being tired of my life, while I was Patenting my invention. But I put this: Is it reasonable to make a man feel as if, in inventing an ingenious improvement meant to do good, he had done something wrong? How else can a man feel, when he is met by such difficulties at every turn? All inventors taking out a Patent MUST feel so. And look at the expense. How hard on me, and how hard on the country if there's any merit in me (and my invention is took up now, I am thankful to say, and doing well), to put me to all that expense

before I can move a finger! Make the addition yourself, and it'll come to ninety-six pound, seven, and eightpence. No more, and no less.

What can I say against William Butcher, about places? Look at the Home Secretary, the Attorney-General, the Patent Office, the Engrossing Clerk, the Lord Chancellor, the Privy Seal, the Clerk of the Patents, the Lord Chancellor's Purse-bearer, the Clerk of the Hanaper, the Deputy Clerk of the Hanaper, the Deputy Sealer, and the deputy Chaff-wax. No man in England could get a Patent for an Indian-rubber band, or an iron-hoop, without feeling all of them. Some of them, over and over again. I went through thirty-five stages. I began with the Queen upon the Throne. I ended with the Deputy Chaff-wax. Note. I should like to see the Deputy Chaff-wax. Is it a man, or what is it?

What I had to tell, I have told. I have wrote it down. I hope it's plain. Not so much in the handwriting (though nothing to boast of there), as in the sense of it. I will now conclude with Thomas Joy. Thomas said to me, when we parted, "John, if the laws of this country were as honest as they ought to be, you would have come to London—registered an exact description and drawing of your invention—paid half-a-crown or so for doing of it—and therein and thereby have got your Patent."

My opinion is the same as Thomas Joy. Further. In William Butcher's delivering "that the whole gang of Hanapers and Chaff-waxes must be done away with, and that England has been chaffed and waxed sufficient," I agree.